Maastricht reflections on innovation : Tans lecture 2011

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Tans lecture 2011

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Abstract
"Innovation is good for you" appears actually the common feature of most science, technology and innovation studies over the last decades. This appears, however surprising given the fact that innovation failure rather than innovation success appears a much more common feature. Hence the simple, but straightforward question which will be central in this Tans lecture: could it be that innovation is not always good for you?

A frequently heard argument is that at a societal level, innovation is renewing society's dynamics and hence leading to higher levels of economic development and welfare. A process of creative destruction destroying maybe a few incumbents to the benefit though of many newcomers. However, sometimes the exact opposite pattern: a process of destructive innovation, benefiting a few at the expense of many, will occur.

In this period of "crises" examples abound of such destructive creation processes. In this Tanslecture some typical examples will be highlighted: our unsustainable fossil-fuel based economic growth at the global level; European monetary integration at the European level; financial innovation at the sectoral level.

The Tans Lecture is organized every year to honour dr. J. Tans (1912-1993), the founding father of Maastricht University.

Maastricht Reflections on Innovation

Luc Soete[1]

Introduction: Tans, opportunism and innovation

25 years ago – I had settled in Maastricht just a couple of months – I received an invitation to come to the official instalment of the Netherlands Organisation of Technology Assessment (NOTA), a now defunct organisation, the Board on which I had been appointed by the then Minister of Education and Science, Wim Deetman. It became the start of a set of coincidences which ultimately led to the creation of MERIT and to what is now informally called UNU-Maastricht encompassing both MERIT and the MGSoG. I'm starting this Tans lecture not to congratulate myself for having had the innovative flair and entrepreneurship of setting up an institute which 25 years later is still here and doing quite well, but to stress the importance of exploiting optimal combinations of circumstances which now and then occur. To be not just an academic with research ambitions and personal convictions to try to carry out "excellent" research, but also to have the ambition to change the research environment within one operates.

Reflecting on it, it is clear that this was something in which I became strongly influenced by my early career experience in the UK. Back in 1978, after having finished my PhD at the University of Sussex and returning to my research position at the University of Antwerp, it became relatively quickly evident to me that I would have a difficult time spending the rest of my academic career studying Belgian economic issues. So I applied for, and became, a "core fellow" at the Institute of Development Studies and convinced my wife to move back to Brighton with our one year old daughter. I had left a tenured research position in Antwerp for a temporary five year research position in Sussex, but those latter positions had up to then always been renewed, and in any case I felt my future lay on the other side of the Channel. So I became a core fellow at IDS on April 1st 1979. Richard Jolly, Dudley Seers, Emanuel de Kadt, Michael Lipton, Reginald Green, David Evans and of course Charles Cooper and Raphie Kaplinsky became my close colleagues. I hadn't paid much attention to what I would actually be earning so I must admit that I was somewhat shocked when I received my first weekly pay. It was practically impossible to live on from Thursday onwards. But I felt at home and adjusted quickly[2].

[1] Director of UNU-MERIT, Professor of International Economic Relations and Director-Dean of the Maastricht Graduate School of Governance.

[2] As I explain in my column on the British summer riots: "we were taken aback by the widespread poverty, the inefficiency of public services and the poor facilities – I remember how we arrived speechless watching the electricity meter in our flat and how it had to be refilled hourly with a 50 pence piece – and the huge class distinction between

Much worse was to come…

On May 5th Maggie Thatcher became the new British PM and declared IDS – considered an intellectually leftist bastion – as a “quango”: a “quasi autonomous non-governmental organisation”. Its government subsidy was immediately cut. Richard Jolly called me in and informed me that regretfully I would have to raise my own salary asap. I hadn’t really any experience in doing so. With the help of friends at SPRU, and in particular Keith Pavitt, I became de facto a contract researcher and spent from then on most of my Sussex time at SPRU. To “pay ride” – as opposed to free-ride – on opportunities which activated so to speak my research entrepreneurship.

If you allow me in these post-Stapel days, a short, social psychological intermezzo not based on any empirical evidence, such research entrepreneurship requires skills which are not straightforward in academics and which can be best described as humility. As researchers in social sciences, we are well aware that the 'divine glory of the ego' is socially a great nuisance; yet as individual academic researchers we are probably all obsessed by it. As Chesterton put it: “*we do value our friends for modesty, freshness, and simplicity of heart. Whatever may be the reason, we all do warmly respect humility… in other people*”[3].

But back to my experience in “pay-riding” on research opportunities.

The region of South Limburg and Maastricht where I landed after my long British and short US experience in 1986, was in many ways a field bed for research entrepreneurship. It was just laying there waiting to be exploited. It had of course been masterminded by Sjeng Tans with the creation of the Rijksuniversiteit Limburg in 1976, but it had been laboured by another Sjeng, the governor of the province, Sjeng Kremers in new directions moving beyond the formal university field. I quickly experienced the possibilities and of course jumped on the bandwagon.

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rich and poor. It was a striking distinction in both the real world and in the TV world with the popular everyday adventures of Eastenders. But in return there was an extraordinary friendliness, an openness and interest in who you were, what you did, where you came from. England was really a country where you wanted to integrate, wanted to use your talents to address all those inefficiencies, where you were invited to speak up and jump on the bandwagon of social mobility.”
See http://www.merit.unu.edu/column/index.php?aid=201108

[3] See The defendant, essays by G.K. Chesterton, 'A Defence of Humility' http://www2.hn.psu.edu/faculty/jmanis/gkchesterton/Defendant.pdf

"Would you give this man 5 million guilders to start a research institute?"

From left to right: Ed van Spiegel, Loek Vredevoogd, Luc Soete, Wil Albeda and Ilya Prigogine

At the NOTA meeting in The Hague, Wil Albeda, the first "building dean" of the new Faculty of Economics and Business Administration, introduced me to Wim Deetman, the then Minister of Education and Science. I briefly talked to him about my first ideas – plans would have been a too big word – to set up a research institute on technology and innovation.

After a couple of months in Maastricht, I had become somewhat concerned about being relatively isolated. The new, only Dutch speaking Faculteit der Economische Wetenschappen[4] (FEW) had been set up on an expected fifty-fifty division of economics and business students. My Dutch had become after nearly 11 years of non-practice rather rusty but fortunately the Department to which I had been assigned, the Department Algemene Economie (AE), was anything but exciting… As it happened, given the low number of Dutch students wishing to

[4] Interesting to observe that this was the title at the start of the Faculty. In 1995, the word "Bedrijfskunde" was added and the Faculty became the "FdEWB" or Faculty of Economics and Business Administration. In 2009, the Faculty became even a School of Business and Economics (SBE).

follow economics studies, the Department came practically immediately under financial pressure. Most of the energy of my colleagues at the department became devoted to intra-organisational fights. These would be for instance fights about being allowed to give more courses. Soon the Department had more courses and staff than it had students of economics. Fortunately we were also involved in teaching business students and students from other faculties as well. The head of the Department liked to refer to himself and the three other professors in the Department as the four musketeers, but as often in economics this seemed to be a normative statement, the reality was the opposite.

So relatively quickly, I realized that there would be few academic research opportunities within AE. I became convinced that to carry out research more freely, money from outside AE, more broadly the FEW and even the university would be needed. Such funding needs would be relatively small, just enabling me to keep in contact with colleagues and friends in the technology and innovation research area outside of Maastricht and in particular in Sussex at SPRU and IDS and in Palo Alto at Stanford where I had stayed for some time. I had mentioned this to Wil Albeda who had been instrumental in convincing me to come to Maastricht and he proposed to introduce me to Wim Deetman at the NOTA meeting back in November 1986.

When I came back home in Maastricht after the NOTA reception in The Hague, I received a call in the evening from Sjeng Kremers, the Governor of the province of Limburg with the request to drop by the next day, which is what I did. He listened to me and made me quickly realize that I had put my financial needs much too low and again I quickly adjusted…

Belgian press extract announcing the creation of MERIT

MAANDAG 18 MEI 1987

«MERIT» : 130 miljard voor wetenschappelijk onderzoek

MAASTRICHT. – De Rijksuniversiteit Limburg te Maastricht en het Nederlandse ministerie van Onderwijs en Wetenschappen zijn in principe overeengekomen een researchinstituut op het gebied van innovatie en technologie op te richten. Dit is eind vorige week meegedeeld. Over de eerste periode van 5 jaar worden de kosten voor een dergelijk instituut begroot op ruim 130 miljard frank.

And so the MERIT adventure[5] started, innovating now and then with new forms of organisational set-ups and remaining by and large an anarchistic field bed of both excellent academic and entrepreneurial research. Some of those new initiatives, actually most of them, did not work out. They failed…

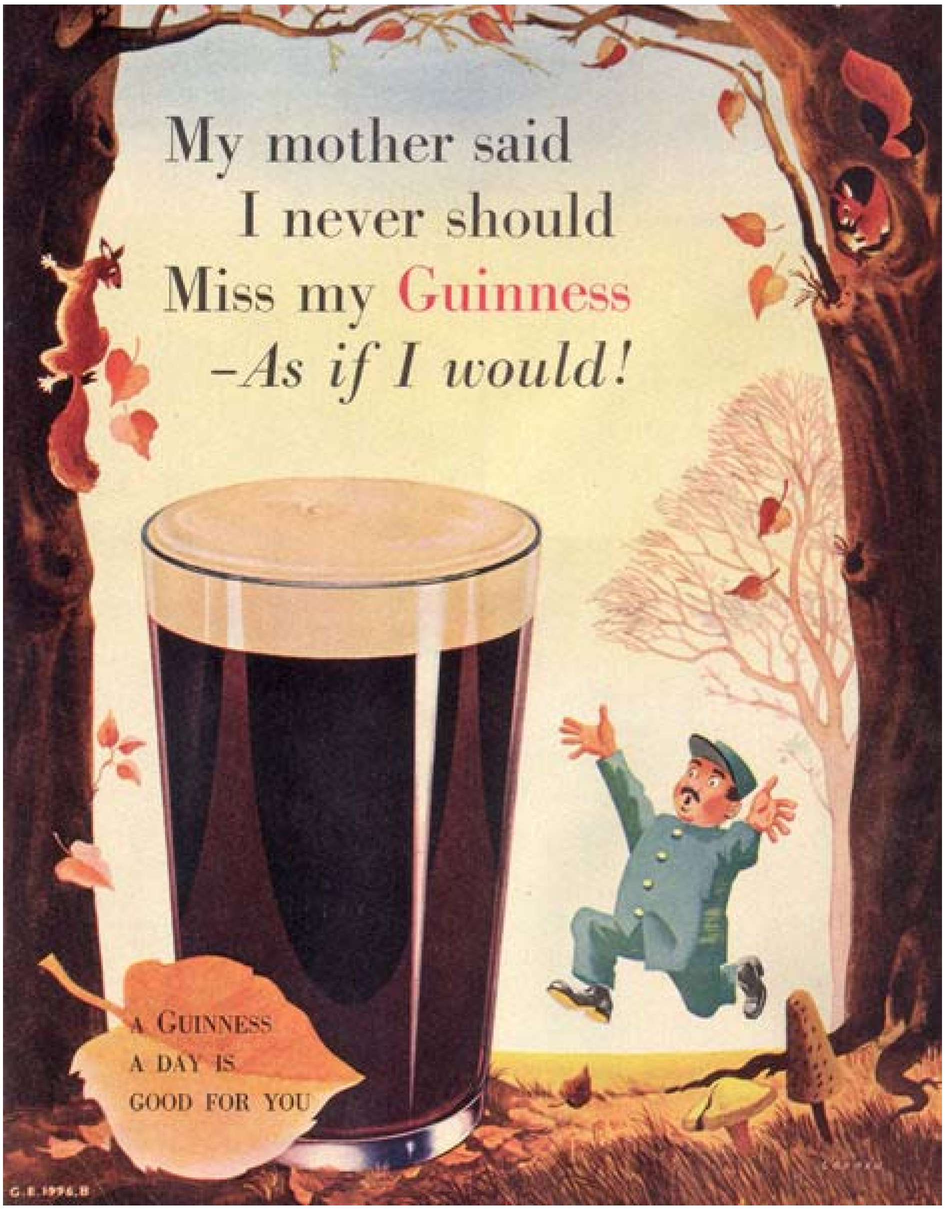
However, in line with Chesterton's humility paradox, while these are probably the ones one can most learn from, I will not elaborate on those here in public. Actually, at this stage I rather prefer to close this already too long-winded personal introduction and move to the more academic core of this Tans lecture.

[5] Unfortunately, and even though the 130 billion refers to Belgian francs, the journalist in Het Belang van Limburg who wrote the article, illustrated in the figure, got billions and millions mixed up…

"Innovation is good for you"

Just like the old Guinness advert, *"Innovation is Good for You"* appears actually the common feature of most science, technology and innovation studies over the last decades. In the Guinness case though this was actually correct. A pint of Guinness a day compares to an aspirin a day in the prevention of blood clots and the risk of heart attack. Unlike other beers, Guinness contains antioxidants like those found in red wine and dark chocolate[6].

Guinness is Good for You



[6] See Mann LB and JD Folts (April 2004). "Effects of ethanol and other constituents of alcoholic beverages on coronary heart disease: a review". *Pathophysiology* **10** (2): 105–12. doi:10.1016/j.pathophys.2003.10.011. PMID 15006416.

In its wisdom, Guinness though decided to stop its “good for you” marketing campaign in Ireland which had primarily consisted of offering free beer to blood donors in blood donor clinics[7]. The company did not want to be identified with a health company… Maybe innovation scholars should do the same thing. The slogan “Innovation is Good for You” might well be true, but appears surprising given the fact that innovation failure rather than innovation success appears the most common feature of innovation studies.

Hence the simple, but straightforward question which I would like to address in this Tans lecture. Could it be that innovation is *not* always good for you?

My claim is that at the broader societal level, innovation does not always represent a Schumpeterian process of “*creative destruction*”, renewing society’s dynamics and hence leading to higher levels of economic development and welfare – destroying a few incumbents to the benefit of many newcomers –, but rather represents now and then the exact opposite pattern: a process of what I will call here “*destructive creation*”. Innovation benefitting a few at the expense of many with as a result an opposite pattern of a long term reduction in overall welfare or productivity growth. As I will try to illustrate a common feature to “*destructive creation*” innovation appears to be its short-termism; its easy, free rider nature; and its dependency on networks whereby the regulatory framework governing the network provides sometimes the major source for innovation.

The core reason why such patterns of “destructive creation” appear to have blossomed over the last ten to twenty years is closely related to the advent of new, digital Information and Communication Technologies (ICT). ICT has allowed for a dramatic growth in opportunities for the fragmentation of service delivery: what has become known as the long tail of product and service delivery differentiation (Anderson, 2006). There is little doubt that doing so ICT has had major growth and welfare increasing effects. It has allowed to satisfy consumers’ wants practically along the full demand curve. As a result many consumers who before could not afford a whole range of services, can now consume those at much lower prices. New “versions” of services have emerged and have been behind the rapid growth of many new varieties of services.

However in many areas, and in particular networks services, the emergence of such service differentiation has also led to opportunities for cherry picking: for selecting those most profitable segments of demand which were essential though for the “full” service delivery. As a result, many features of “universal service” delivery associated with the previous network service delivery have come under pressure. Their quality of delivery has become of lower quality or in the worst

[7] Irish Times, 22 March 2010

case has even become discontinued. In network services it has increasingly become expensive to be poor.

At the same time, existing network regulators were neither well-prepared nor informed about the many new digital opportunities. On the contrary deregulation and/or liberalisation led to new products or service delivery, inspired by the change in regulation, and exploiting more fully the new digital opportunities of product differentiation with in some cases negative societal externalities or even systemic failures.

Economists, and social scientists more generally, seem to have not been sufficiently forthcoming in highlighting the limits of innovation in sectors where forms of "*destructive creation*" appear much more common than usual forms of creative destruction. By contrast, colleagues in the Science and Technology Studies community did of course have a well documented framework in which they explicitly looked at some of the possible negative externalities of technical inventions.

Actually the now defunct NOTA was the official Dutch "Technology Assessment" organization set up for this purpose in 1986. And when MERIT was set up, we had the opportunity to have people around like Wiebe Bijker and Gerard de Vries at the Faculty of General Sciences. But over time these technology assessment analyses developed further outside of MERIT and the economics profession, and innovation assessment never emerged[8].

In this Tans lecture I will focus on three examples of such patterns of "destructive creation": first our ecologically unsustainable, innovation-led consumerism growth path; second financial innovations as the case *par excellence* of "destructive creation" and third, and not surprisingly given the nature of the current sovereign debt crisis in Europe, European monetary integration and the euro. After all, I witnessed the birth of this institutional innovation here in Maastricht at first hand. In each of these cases, as I will

[8] As Paul David put it in a set of provocative comments which run in a very similar direction to those presented here, but more directed towards the "economics" innovation profession: "The optimum rate of innovation for an economy, or a social organization is a notion that rarely is discussed, except by implication which has left it poorly defined. Yet, unless this concept somehow was implemented and thereby operationally defined, how could one claim to judge whether the pace of innovation currently prevailing in a given branch of industry or sector of the economy was too slow, rather than just right or too fast? By contrast, the optimal rate of Harrod-neutral technical change and hence the optimal steady-state rate of labor productivity growth is nicely defined, at least for certain familiar classes of growth models; and, in the literature on the economics of R&D the question whether we have too much or too little (R&D) input into the processes of research and invention is frequently asked and answered empirically. Why should not excessive innovation be acknowledged to be just as much a possibility as is excessive investment in scientific research, or in industrial R&D?" (David, 2010, p.3).

argue, the solution will have to be found in strengthening society's capacity to develop innovations of the welfare enhancing "creative destructive" type.

A. Innovation, planned obsolescence and unsustainable consumption growth

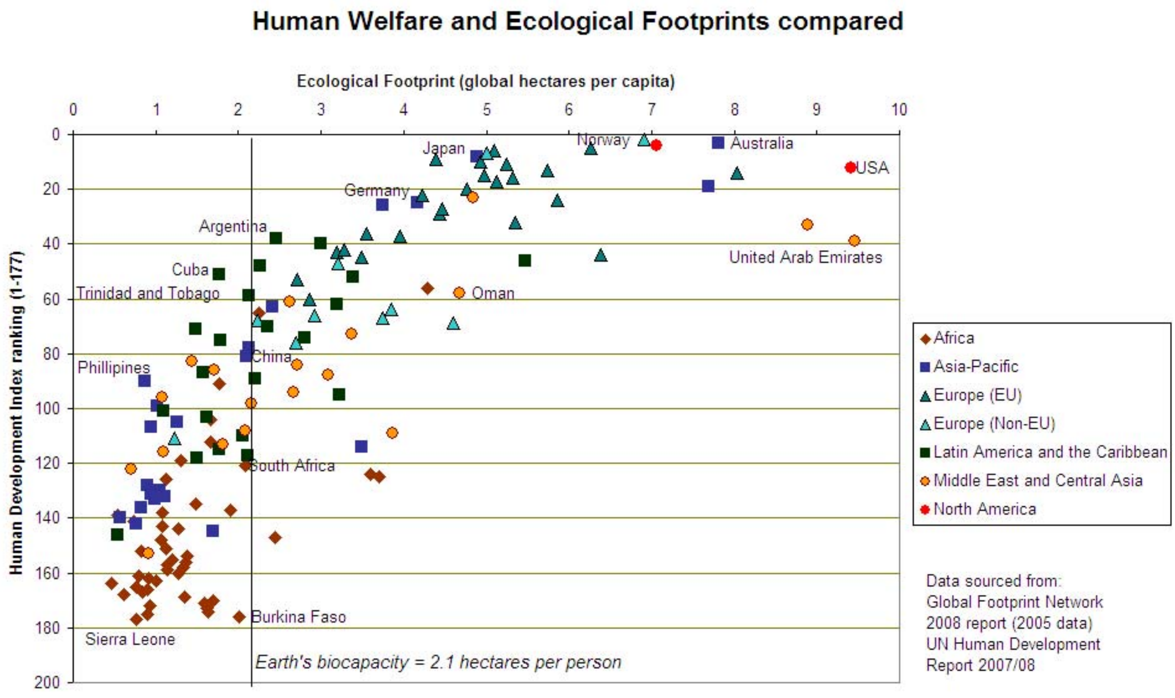
Of course we do know from the large literature on the economics of innovation that there are plenty of cases of technological failure: the long term "locking in" e.g. of producers and consumers in technological inferior trajectories as highlighted by Brian Arthur (1989) and Paul David (1985, 2001) amongst others. And we also know that at the policy level there are numerous conflicts in the design of innovation policy between innovation support and the speed of diffusion as highlighted by Paul David (2010) and Paul Stoneman (2001).

Here though, I would like to look more closely at the way innovation in consumer goods might have led our societies to a conspicuous consumption path of innovation led "destructive creation" growth. In most modern growth models, the decision to invest in research and development is driven by the prospect of monopoly profits on the incremental value that new vintages provide. In short, innovation goes hand-in-hand with value creation.

Yet one can also imagine exactly the opposite pattern: a process of destructive creation in which innovation actually destroys the usage value of the existing stock of durable goods and as a result induces consumers to repeat their purchase. Emilio Calvano from Igier - Bocconi University developed a formal model illustrating the widespread nature of such a phenomenon. Let me briefly quote from his paper: "By allowing innovation to affect the value of the existing stock of durable goods, we highlight the role of destruction rather than creation in driving innovative activity. The formal analysis shows that destructive creation unambiguously leads to higher profits whatever the innovation costs. On second thought this shouldn't come as a surprise. If the "problem" from a profit maximizing perspective, is the durability of the output then it follows that any (cheap enough) mechanism that reduces or eliminates it would put the monopolist in a stronger position (i.e. 'closer' to the rental outcome). The power to "wreck" the value of old versions of a product ends up serving much the same purpose and hence the profit restoral." Of course, this destruction of others' monopolies may happen to the destructive creator later, but the point is that there is no mechanism to take into account the optimal timing of innovations in regard to the destruction costs of all sorts of affected capital. The analysis presented by Calvano highlights the fact that the phenomenon of "destructive creation" is rather widespread and has been very much induced by the emergence of new ICT consumer goods.

Easy and cheap ways in which existing usage value can be destroyed is through e.g. product design and restrictive aftermarket practices, and in the extreme case through so-called "planned obsolescence" limiting on purpose the life span of particular consumer goods[9]. We will not go here into the conspiracy versions of such theories but rather follow the internal economic logic of innovations destroying old product versions as highlighted by Calvano. Probably the most extreme and widespread case would be new product design in e.g. fashion clothing or shoes[10] destroying existing output, but there are of course many other forms and sorts of restrictive aftermarket practices which can be found in many ICT related sectors such as software writers limiting backward compatibility, or electronic goods manufacturers ceasing to supply essential after-sales services or spare parts for older products. Not to mention smart phones, mobiles, iPods or iPads. It is actually surprising in how many areas processes of "*destructive creation*" exist that hinder prolonged usage and induce customers to migrate continuously to newer models.

Elsewhere, I have argued how this "*conspicuous innovation"* consumption growth path which in its environmental impact and ecological footprint will be unsustainable in the developed world and increasingly so in the rapidly emerging country world, and warrants ultimately a shift in the process of research and innovation.



Source: http://en.wikipedia.org/wiki/File:Human_Development_vs_Ecological_Footprint.jpg

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[9] See e.g. the legal case brought against Apple in 2003 with respect to the planned obsolescence of the battery life of the batteries in the iPod.

[10] The Imelda Marco sydrome as Paul David (2010) put it: "The near pathological impulse to push the rate of innovation to be ever-faster needs a medical psychiatric designation, and I propose to refer to it as the innovation fetish's "Imelda Marco syndrome" – in memory of a famous instance of the uncontrollable, obsessive accumulation of more and more pairs of women' shoes (another, richly documented fetish object)."

From innovation for the tip to the bottom of the income pyramid.

In many ways and as highlighted in the Calvano model, the focus of industrial research and innovation has been on continuous quality improvements of existing and new consumer goods, enlarging continuously the demand for such quality improved or new consumer goods. It formed the basis of the growth model as it emerged over the post-war period in the US, Europe and Japan which generated its own infinite demand for more material consumer goods. A continuous growth path of rising income with increasing consumer goods' production *and* consumption (Pasinetti, 1981). The continuously rising industrial R&D efforts in high income countries appeared to match perfectly the continuously rising incomes of the citizens of those countries leading to a continuous enlargement of their consumption basket with new, better designed or better performing products. The initial demand for such quality improvements often arose from extreme professional, sometimes military use circumstances, but thanks to the media – which typically would emphasize the prestige image of such professional use using symbol figures such as sport athletes or movie actors – the average, non-professional consumer could easily become convinced that he or she was also in need of new goods with such technologically sophisticated professional quality characteristics even though those characteristics might ultimately add only marginally to one's utility. In a certain way the highest income groups in society, the "***tip***" of the income pyramid, acted often as first, try-out group in society, contributing happily to the innovation monopoly rents of the innovating firm. So a continuous circle of research was set in motion centring on the search for new qualitative features[11] to be added to existing goods.

As highlighted above in Calvano's model this "*professional-use driven*" innovation circle has been the main source for extracting innovation rents out of consumer goods – ranging from consumer electronics, sport goods, shoe wear, household equipment, computers, mobile telephony, medical diagnostics, sleeping comfort, and so on – with a "too long" *physical* life time[12].

[11] One may think of audio and sound, vision and clarity, miniaturization and mobility, weight and shock/water resistance, feeling and ergonomiticity, etc.

[12] The worldwide risks of this relatively straightforward professional-use driven innovation strategy for the existing global multinational corporations have increased significantly, not in the least because of globalization. While the world market for new innovative goods appears at first sight gigantic and without any doubt sufficient to recoup investments relatively quickly, the huge research, development, prototype and global marketing costs, coupled with ever-increasing numbers of competing international players means that the length of time that a company can enjoy its innovation rents is diminishing very rapidly. Hence, despite the growing high income classes in the large emerging BRIC economies, the new generation of goods being sold to the emerging high income classes in those countries will be insufficient in actual earning opportunities to fund both the shift towards mass production and the development of the next technology generation of the good in question. Having developed incredibly sophisticated technologically new goods, many firms are encountering global sales problems over a

The need for a shift in research on innovation in private businesses away from such conspicuous innovation has been popularized by CK Prahalad in his famous book: The Fortune at the Bottom of the Pyramid (2005) with the provocative subtitle "*Eradicating Poverty Through Profits.*" One of the best-known Prahalad examples of a Bottom of the Pyramid (BoP) innovation is the multiple-fuel stove innovation developed for the rural poor, in which cow dung and biomass (sticks and grass) can be used as cooking fuels. Traditionally these fuels are used in an extremely inefficient way and are dangerous to use due to the smoke inhaled from indoor fires. Since the book of Prahalad, there has been a flood of similar examples of BoP innovations being primarily introduced by foreign, large multinational corporations from developed countries in developing countries, sometimes in poor rural villages, sometimes in urban slums[13]. This is where BoP innovation takes on, in my view, a new meaning in line with its creative destruction nature.

In this sense the notion of "*grassroot innovation*" developed by Anil Gupta, one of our close colleagues at Ahmadabad can be considered as the endogenous, intrinsic version of Prahalad's external, top down version of BoP innovation. The innovation process is now in the true destructive creation sense likely to be reversed, starting with the design phase which will be confronted directly with any attempt at finding functional solutions to some of the particular BoP users' framework conditions. This will involve not just the need to bring the product on the market at a substantially lower price than existing goods, as Prahalad emphasized, but also a clear adaptation to the sometimes poor local infrastructure facilities with respect to energy delivery systems, water access, transport infrastructure, digital access, etc. *Autonomy* is the key word here. It is no surprise that the most rapidly spreading technology in developing countries has been mobile communication with currently more than 3 billion users worldwide. Autonomy from high quality energy, water, broadband network availability is undoubtedly one of the most pervasive drivers for BoP innovation. Another one might well be "*cradle to cradle*" sustainable innovation. The lack of high quality logistic infrastructure facilities in rural development settings might well imply that once goods are sold, the repair and/or central recollection of obsolete goods or their parts will be expensive. By contrast local re-use along the principles of cradle-to-cradle might well be a new form of sustainable grassroot innovation. It is in this sense that one might talk about "*appropriate innovation*" and that there seems to be some analytical similarity with the old notion of "appropriate technology"[14].

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much contracted product life cycle with increased competition and rapidly over-saturated markets.

[13] For some of those examples in the sanitation area, see Ramani (2008). For an overview of the BoP literature see Weehuizen (2008).

[14] The notion of appropriate technology was of course much more formalized in terms of a rational set of economically determined "choices of technique" (Sen, 1968), depending

The feedback from BoP users and from design developers upstream towards more applied research assistance, even fundamental research in some of the core research labs of Western firms might well become one of the most interesting examples of reverse transfer of technology (from the South to the North), re-invigorating and motivating the research community in our highly developed world increasingly "in search of relevance." Not surprisingly, the main focus within the developed world at the moment is on BoP innovations in the health area, a sector where applied medical research is increasingly dominated by access to new technologically sophisticated equipment and much less by more down to earth research questions about, and the list is non-exhaustive: anti-biotic resistance, infectious diseases or resistant tuberculosis. Not surprisingly, health is the sector most in need for what could be called a bottom of the pyramid research re-prioritization.

B. From financial innovations to systemic failure

I now turn to my second case of "destructive creation": the typical case of financial innovations. The latter have actually been described as innovation of the "destructive creation" type[15] and have by now been well covered in the popular economics literature[16].

Personally, I disagree with economists claiming that the financial product innovations of the last ten to twenty years, broadly since the advent of digital information technologies, like Credit Default Swaps (CDS) or securitization were just "wind-making" innovations or illustrations of the lack of knowledge of risk management with financial experts. These new financial products were at the time they were introduced truly innovations in the real sense of the term. However, their systemic impact on the rest of the system was insufficiently thought over when the banking system was deregulated[17]. Regulators did not pay attention or were unaware of the new innovative opportunities: society

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very much on capital-labour substitution possibilities. The term "appropriate innovation" by contrast is much more open.

[15] E.g. the common definition found on the Internet: "destructive creation was popularized during the financial crisis of 2007-2009, when large banks and insurance companies ceased to exist as a result of financial innovations." See http://www.investopedia.com/terms/d/destructive-creation.asp#ixzz1cHoBVswo.

[16] See amongst others the debate on the motion "This house believes that financial innovation boosts economic growth" between Ross Levine (in favour) and Jo Stiglitz (against) in The Economist, see http://www.economist.com/debate/overview/166 or Bruce Nussbaum, "The Culture of Finance – Why Financial Innovation Failed", Business Week, January 13th 2010, see http://www.businessweek.com/innovate/NussbaumOnDesign/archives/2010/01/the_culture_of.html

[17] There is today probably a broad consensus that with the repeal of the so-called Glass-Steagel act in the US in 1999, the door was opened for "destructive creation" innovation.

missed dramatically an appropriate innovation assessment tool. This was even more so the case after having ignored the sceptics in the Basel I process in favour of giving leeway to the lobbyists of the banks constructing various balance-sheets tricks.

The fact remains of course that the current stock market value of banks, following e.g. Datastream's bank index, is today at a level broadly similar to that of end December 1985, more or less 26 years ago. As the Dutch economic journalist Maarten Schinkel put it in NRC a couple of weeks ago in his column *A quarter Century of money thrown away*: "Imagine all those mergers, demergers, strategic plans. All this bragging of investment bankers, of the buying up of very expensive teams from competitors. The payment to personnel that apparently possessed supernatural talents with ever more bonuses. The explorations into unknown territories with financial derivatives, structured finance, or the financing through South-Korea of a motorway in Pakistan. All these measures, enterprises and strategic plans have always been defended with the ultimate argument of the banking CEOs: shareholder's value. So… where is it?"[18]

Our liberalized, deregulated financial sector represents in many ways the perfect example of destructive creation based on short term opportunities. Yesterday and today.

See e.g.
http://www.youtube.com/watch?v=aC19fEqR5bA&feature=related

Whether this interview was a hoax as some claim or not is to some extent irrelevant: the case of the trader as destructive creator is brilliantly made. I do not think I should add anything here.

What then is the solution to financial innovations? The answers are actually known by the specialists[19]. Unfortunately the specialists are paid best by those who produce damages by making money using financial innovations.

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[18] Schinkel, M., "Een kwart eeuw van weggegooid geld" (A quarter century of money thrown away), NRC, 28 october 2011, p.26.

[19] The return of transparency into accountancy; forbidding destabilizing naked short sales; banning information hiding off-balance-sheets constructs; responsibility of the selling agent for the information given; dropping sales provisions not in favour of pricing of advice but rather payment of agents in proportion to the stock of contract values. Clear personal responsibility for the screening of bought packages; etc. The list is not exhaustive.

C. From the Euro to European disintegration

Probably the most dramatic institutional innovation, which we have witnessed here in Maastricht with probably the most devastating impact on the well being of many Europeans in Greece, Ireland, Portugal, Spain or tomorrow Italy is of course the introduction of the euro, as European common currency in 2001 and the Economic and Monetary Union (EMU) as approved here in Maastricht in 1991.

It would be interesting at some stage to put the institutional innovation of European monetary integration back in its historical context. Personally I have always been very critical of the institutional "jump" in European integration back in the late 80's with the sudden proposal to push European economic integration in the direction of a monetary union. The latter was for me the final act, the cherry on the cake of economic integration. I compared it back in 1992 to putting the roof on a European house of which the foundations had been laid with the introduction of the Single Market, but with as yet no walls. Walls, which would be essential to guarantee a process of real, as opposed to just financial economic convergence between the different European member states. With my colleagues in Maastricht Joan Muysken and Jacques Pelkmans we organized the so-called Pre-adviezen of the Koninklijke Vereniging voor Staathuishoudkunde on monetary integration back in 1992 which described the many risks involved in the creation of a monetary union between countries with very different development levels. A couple of years later, when the conditions for participating in the EMU became fixed, I signed with my Maastricht colleagues Clemens Kool and Joan Muysken, the letter of some 70 economists[20] expressing strong concern about the way the euro would become implemented. Over the last 15 years I think I wrote a dozen or so columns in both local and national newspapers about the inconsistencies of introducing the euro in countries such as Italy[21] or Greece and the likely major systemic problems this would lead to.

So, there is no need here to elaborate on the "*destructive creation*" nature of the euro as European institutional innovation. And the claim that (for once) we, Maastricht economists, were right in our warnings doesn't also really help in the current debate. Therefore, I'd rather focus here on the specific characteristics of the apparent, sudden systemic failure of the euro, particularly in countries having large sovereign debts. For the record, until May 2010 Greece had a triple A rating in financial markets on its bonds from rating agencies such as Moody's.

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[20] See "Met deze EMU kiest Europa verkeerde weg", Volkskrant, 13/02/1997 and also Kool, Muysken and Soete "Het gelijk van de economen", De Limburger, 22 february 1997.

[21] See amongst others my columns in De Limburger on the subject of the euro, in particular the following "E pericoloso salomone", 1997; "Eurosclerose", 1999, "De euro: kalverliefde of SM?", 2002; "Een krakend Europa", 2003; "De euro à la Grecque", 2007; and "Het gat in de euro-emmer", last week on October 28th 2011. All available at www.soete.nl

At first sight, it remains indeed difficult to understand how as a result of a by and large externally induced financial crisis linked very much to the crisis in the US (Lehman, sub-prime mortgages, securitization, CDS) and UK back in 2008, the current sovereign debt crisis has become first and foremost a crisis of the euro area countries. In most European countries, just like in Japan, public debt has been funded from its inception by and large *domestically*[22], meaning that those lending money to the state would also be those that had a stake in the national political system. In this sense, large amounts of public debt are not really an issue of too much economic concern as the case of Japan illustrates, or my colleague Paul De Grauwe (2011) from the Catholic University of Louvain (KUL) always claimed in his systematic critique of the Maastricht criteria. *"Solvency is in the eye of the counterparty"*: when the counterparty to assess the society's solvency is the society is itself, it will in general be in the vital interest to keep "rolling the debt"[23]. The one exception is of course the USA whose debt is largely funded externally and expressing to some extent also the country's geopolitical leverage on the rest of the world: what Larry Summers (2004) called the "balance of financial terror."

In this sense the Euro as an institutional innovation implied of course that national public debt would increasingly become transnational, European owned. Such that banks across the EU would try to take advantage of the differences in interest rates on secure euro government paper. It led at the same time to a series of mergers and acquisitions in the European banking sector with of course the dismantling of the ABN-AMRO bank as the most striking example. The result has been that European citizens through their national saving accounts would start owning large parts of Belgian, Greek, Irish, Italian, Portuguese or Spanish debt. Without of course having any say on the solvency criteria as applied in any of these countries. Very quickly large parts of national debt in the peripheral European debt became as a result in effect funded by European core countries.

The picture below was originally designed by the New York Times to help visualize the systemic, financial dependency problem and to determine which European countries owe whom[24]. Here's the original *link*. A more recent update with figures for May 2011 and now also including the United Kingdom, the most indebted nation in Europe with almost 1 trillion Euro of liabilities, mostly toward Spain and Germany is given below. It goes a long way to explain the

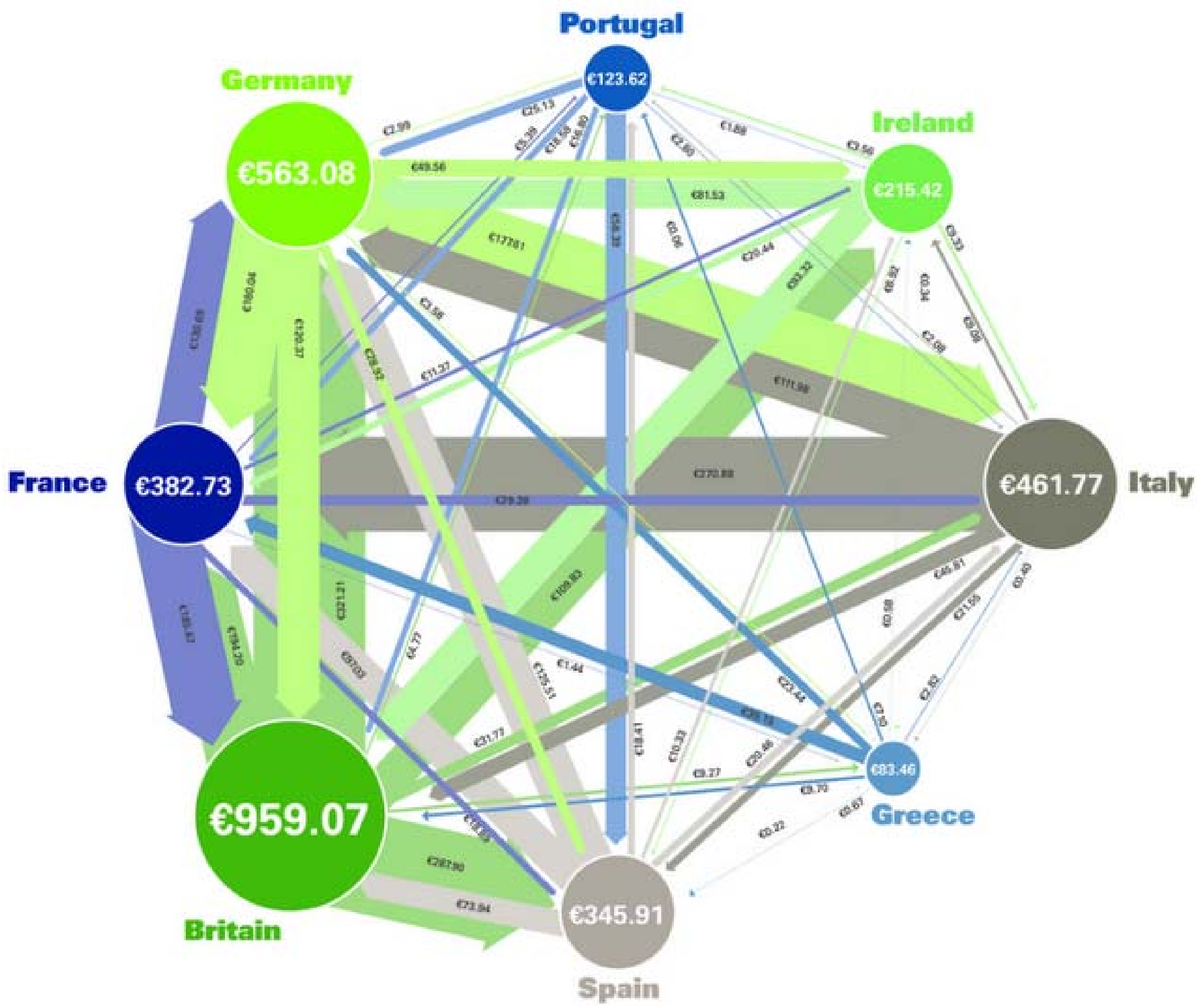
[22] And of course also partly in the hands of foreign banks: French, German, Belgian, Dutch.

[23] In case of European countries, and contrary to Japan, foreign banks (European, British as well as American) would also own debt and hence could be expected to also have an interest to keep rolling the debt.

[24] Bronwyn Hall at MERIT drew my attention to it. As she put it to me, it explains in just one picture the euro problem.

nervousness of the British Prime Minister in being excluded from euro crisis discussions amongst the 17 euro-zone member states.

Europe's Web of Debt (May 2011)[25]



Source: http://www.thepeakeffect.com/2011/09/europes-web-of-debt-update.html

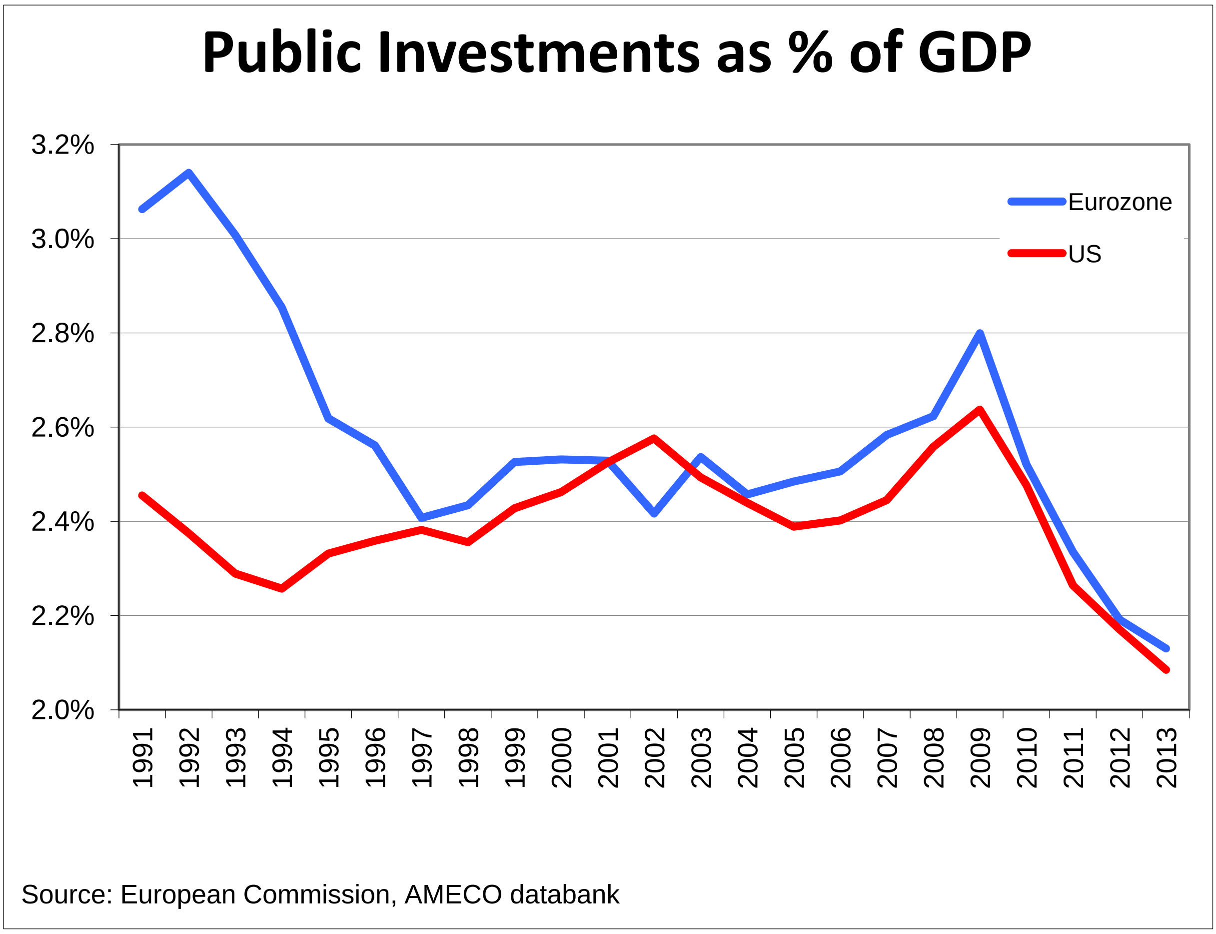
[25] It is interesting to observe that the US part in this picture of the European web of debt is missing. Yet as is well known, US bank and financial institutions have also a large stake, some estimates talk about 50% of their financial wealth denominated in euros. Nobody knows really how many of the US banks have CDS bets on a Greek default. What is likely though is that the weakest US Banks will have to pay if they become due. In short, while all euro-zone countries are of course most directly involved in the sovereign debt crisis as illustrated in the figure, the latter crisis is not just one of the euro countries. The difference is that individual euro-zone countries, hence not Britain, no longer have the power to print money but are now dependent on the European Central Bank. And the latter is, as Paul Krugman put it: "designed to fight the last economic war. It's a Maginot line built to prevent a replay of the 1970s, which is worse than useless when the real danger is a replay of the 1930s". (Krugman, P. "The hole in Europe's bucket*", New York Times*, October 25th, 2011).

In short, as a sustainable institutional innovation, the introduction of the euro would only make sense if it had been accompanied by clear movements in the direction of a political union, in particular with respect to member states' fiscal policies and financial regulation. Constructing one could say the walls of the European house starting from the roof, something which might have been feasible as long as the world economy – the outside weather – would remain calm and predictable. With the financial storm of 2008, the instability of the European house became suddenly quite visible. Worse, a systemic sovereign debt crisis emerged thanks to those short term "destructive creators" described in the previous section (and BBC video) who will exploit to their own benefit any common European financial attempts aimed at safeguarding the euro. In short, the countries in the euro-zone area appear today to be "locked" in a sheer impossible choice: a collapse of their common currency with as a result a dramatic decline in welfare and income in all euro-zone countries or a readiness to move in the direction of a more political union despite the huge differences in member states in cultural habits, in pension and social welfare systems, in productivity particularly in the public sector, in access to European markets, etc.

How can we possibly get out of this mess, you may ask? A question which should be in the mind of any economist, but probably much more so in the mind of somebody who is formally still a Professor of International Economic Relations at Maastricht University in Maastricht. Unfortunately this lecture is limited in time, but let me try in these couple of remaining minutes to shed some light on some of the most obvious solutions. I'll focus on two areas which fall outside of the traditional financial toolbox but which form in the true sense of the term institutional innovations of the creative destructive type.

a) First, the huge financial investments in each other's economies, both between euro-zone and non euro-zone member states leads indeed to the political realization even within the most euro-sceptic countries that close mutual control of each other's fiscal policies, of the functioning of member states' internal labour markets and more broadly the sustainability of each others' social welfare systems including pension schemes, is in each country's national interest. What up to now was politically unthinkable, appears now economically the only way forward: further European integration not out of love but out of necessity to regulate markets and control politicians.

The key sector which has up to now been ignored in economic integration in Europe, and which becomes central here, is the public sector. The budgetary austerity in the euro zone, has forced many governments to cut back on public investment projects. One of the central problems here is that the old 3% Maastricht criteria of public deficit does not take into account the *quality* of public expenditures. There is of course a huge difference between public expenditures devoted to consumption activities and public expenditures devoted to public investment. One of the most robust results from modern growth theory is the strong positive impact of public investments in e.g. infrastructure and education boosting overall productivity and hence also economic growth. Yet and as highlighted in the picture below, European governments have since 2009 been dramatically cutting in public investment.



Source: Updated from De Grauwe, P. "Eurobonds: a crucial step towards political union and an engine for growth", mimeo, March 2011.

But of course it is not just a question of the volume of public investment[26], but again the quality of such investments. What I would propose is to allow the best performing MS' public services to take the lead in a new phase of economic integration in the EU: that of public services. As a result the performance of the public sector in Europe, still responsible for the largest part of GDP, will receive a dramatic boost in efficacy and efficiency. We all know the typical European joke of the Brussels dinner organized by an Italian, prepared by a Briton and with a

[26] Witness the huge inefficiencies in the spending of European structural funds in many European countries. See the research done by the Bureau of Investigative Journalism and the FT on Europe's hidden billions – tracking the European Structural funds, at http://www.thebureauinvestigates.com/category/projects/europes-hidden-billions/

German giving the after dinner speech. But the ideal picture also exists of course. There is no reason why not to exploit much more fully across Europe the diversity in different member states, even regions, of the quality and efficiency of public service delivery. *Smart public specialization*. Think of our Dutch tax-paying office taking on the responsibility for earning tax revenues in Greece, Italy or even Belgium. Or using the approach of Belgium's social security bank[27] to manage social security payments in every member state. Again the approach would not consist here of a centralized approach but of a decentralized approach, leaving the public services in each country under national and local jurisprudence and responsibility, but reaping through "best practice" comparisons, efficiency scale advantages in back office treatment of data, improving the speediness and reliability of the service, etc. All this is likely to result in a significant impact on productivity growth in countries with low productivity levels as the private sector in those countries will also benefit from the more efficient public sector. At the same time, mutual trust in MS' national public sector capabilities, culture and ethics will receive a boost. European diversity will again have a positive connotation across the EU. Tax revenues in some of the Southern MS will increase substantially as tax evasion and large parts of the over-sized black market economy will become integrated into the formal national economy.

At the same time, the EC could provide underlying technocratic support for such reforms which again would benefit from the variety of institutions within different European countries. The ECB as a centralized European bank with national banks in each MS is often used as the example, but other decentralized institutional reforms can also be explored[28]. In short, the result is a pragmatic approach to member states reform whereby subsidiarity and additionality are key concepts in providing legitimacy to newly created European, decentralized institutions with locations in different MS.

b) Second, the large sovereign debt in some of the peripheral European countries should be viewed as potential pilot cases for triggering innovation in public procurement with the help of the private sector. Let me give a concrete example dealing with lighting[29]. About 19% of the electricity generated globally is used for lighting purposes and around 70% of all existing lighting equipment is energy inefficient by today's standards. Lighting, and in particular public lighting is a pure case of "low hanging fruit" innovation. New technologies such as LEDs can provide energy savings of up to 80%. Furthermore, additional energy savings can easily be realized such as lower costs for air conditioning, as LED-based

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[27] The so-called "Kruispuntbank Sociale Zekerheid" (KSZ) is an electronic network between Belgian institutions of social security and the state register. It is considered as a government "best practice" case.

[28] For example in the area of collecting statistical evidence, Eurostat is gradually transformed into a fully decentralized organization exploiting at EU level each MS' comparative advantage in one particular statistic.

[29] The subsequent information is from the Dutch Philips company.

lighting produces much less heat; savings in high voltage grid capacity; and lower maintenance costs for lighting systems – state-of-the-art light sources have a hassle-free lifetime of more than twenty years, as opposed to three years for many of those currently installed.

The main impediment to the introduction of such “low hanging fruit” innovations in lighting is a financial one, affecting both public procurement and household decisions, and have to do with the fact that decisions regarding capital expenditure are not based on a total cost of ownership approach, but on a cost of initial investment approach. Thus whereas the overall financial investments needed to achieve the energy savings in lighting are relatively modest, the initial expenditure will tend to be much higher than the expenditure on traditional, electricity-guzzling lighting systems. And while we all know that over the whole lifecycle of the product (the initial capital expenditure plus electricity consumption plus maintenance), it is financially much wiser to buy a 5 euro energy efficient light bulb than to buy its 1 euro incandescent counterpart, many of us will buy incandescent bulbs. The same holds true at the institutional level; worse, it will even be more so in the case of many of the debt stricken municipalities, regions and countries in the Southern euro-zone area.

Why not have Dutch Philips start with the Acropolis?

Those debt stricken countries, regions or municipalities in Greece, Portugal, Spain or Italy, should become pilots for new innovative procurement aimed at reducing public electricity expenses and based on new creative financing solutions. One could talk here about new North-South European Private-Public Partnerships. Furthermore, with the help of the European Investment Bank using available structural funds, it should be relatively straightforward to eliminate the current ‘lowest initial cost’ bias from the public sector’s procurement equation in those countries/regions.

In short, it is time to bring back the discussion of European integration to the real economy and to the creativity of innovation scholars. To the many ways in which innovation as process of cost-saving and quality improvement can rebuild the basis for catching-up growth in sectors which appear to have been isolated from creative destruction in the good old Schumpeterian definition. Europe with its widespread diversity represents from this perspective a unique experimental ground for such innovation.

Conclusions

The three examples of innovation through a process of "destructive creation" having led to long term systemic risks and welfare loss, given here, all require a highly sophisticated, regulatory framework which is flexible enough to respond to those perverse "innovative opportunities". In each case as I have tried to argue, this calls for expertise with public agencies sufficiently filled with high quality staff and strongly independent so as to be able to resist the pressures of individual firms' interests seeking new, short term innovative opportunities more driven by planned obsolescence than by true innovation as highlighted in the first case; of sectoral and individual traders' financial interests as in the case of the sort of quick, destructive financial innovations described in the second case; and of political national interests as in the case of the participation in the euro-zone area of countries ill equipped to do so. In short, the innovation processes described here do not call for "less public sector", but rather for a more qualified, independent public sector attracting people with high qualifications such as our university graduates who are at the service of the public interest and who will try to make the best out of the continuous flow of innovative challenges society is continuously throwing up.

Let me add one small reflection here, the only one, on the current debates on the private versus public funding of higher education. From the perspective sketched out here, the idea that the butcher should not pay for the education of the lawyer is clearly too simple. The butcher too will benefit from a good handling of the law, just like the lawyer will benefit from a good quality control on the butcher's handling of meat. It is not only that they deliver "good services" for others in accordance with due payments but it is also that doing so, one will hopefully avoid the emergence of e.g. a lack of lawyers and as a result the emergence of illegal activities in society or the emergence of diseases from a poor handling of meat in the absence of controls. These are "public goods" aspects for the whole of society at a systemic level.

And of course there are the well known broader externality effects of higher education[30]. The butcher and the lawyer, as well as all the other well educated people are much less productive if those cooperating with them are not well educated. Everyone benefits from the qualifications of his or her collaborators and should be interested in contributing to his or her education[31]. The butcher and the lawyer, as well as all other citizens have also children who should acquire education. As a society, we should in other words not want to make education more costly but rather cheaper. This is not only good for the later salaries of the educated but it is also good for international competitiveness of firms and long-run growth aspects, mostly forgotten in individualistic rates of

[30] See also J. Ritzen (2010).
[31] J. Creedy and P. Francois (1990)

return analysis. Success of studying and/or future salaries remain highly uncertain though. Courses at universities have sometimes failure rates above 50% and salaries tend to be lower for a labour market entrant for twenty[32] years after every crisis. In short, it is not a good idea to increase the financial risk by raising higher study fees. Even the current system has the very doubtful characteristic to first eliminate 30% of all students in the beginning, rather than in enhancing the training that is needed for the less perfectly talented. The public financing of education should precisely help to reduce risk aversion and early drop outs once accompanied by good organizational measures.

Fortunately this is exactly the mission of this, still young university, as Sjeng Tans got it off the ground thirty five years ago, and as I have been able to enjoy it over the last 25 years, exploiting now and then the many growth opportunities of its fertile location here in Maastricht. A Maastricht University I very much look forward to be associated with in the years to come.

Thank you for your attention.

[32] H. Heijke and C. Meng (2006)

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